

MANUFACTURING EXTENSION PARTNERSHIP

Success Stories from the Field

United Defense

Georgia Manufacturing Extension Partnership

United Defense Uses Lean Techniques To Streamline Processes

Client Profile:

United Defense, a Virginia-based manufacturer of combat vehicles, artillery, naval guns, missile launchers, and precision munitions, is recognized for its research and development efforts in key technologies, development of combat system operating software, and highly efficient manufacturing processes. The Ground Systems Division facility, located in Aiken, South Carolina, employs 170 people (approximately 11 percent of whom commute from nearby Georgia). The Ground Systems Division provides components to the company's main manufacturing plants in Minneapolis, Minnesota; Aberdeen, South Dakota; and York, Pennsylvania.

Situation:

United Defense - Aiken became interested in applying lean concepts to manufacturing operations after the plant manager attended a two-week conference on lean enterprise at the University of Michigan. Though the plant's employees were already versed in the kaizen blitz technique, their manager challenged them to apply other concepts to select areas of the plant. The first area they wanted to tackle were the uptakes for United Defense's Vertical Launch System (VLS). The company contacted the Georgia Manufacturing Extension Partnership (Georgia MEP), a NIST MEP network affiliate, for assistance.

The uptakes are basically a chimney system for missile fumes and exhaust. The uptake line was chosen by United Defense management for lean implementation because it is an established product line, involves assembly line work, and has relatively simple fabrication steps.

Solution:

Georgia MEP made an initial visit to United Defense and confirmed the VLS uptake product line as a successful pilot project for teaching employees lean techniques. United Defense assembled a project team of supervisors, production employees, engineers, and representatives from other departments to work with Georgia MEP's lean specialists. After conducting basic lean training for this cross-functional team, Georgia MEP began by introducing the value stream mapping (VSM) technique.

VSM visually documents every step of every process in the manufacturing operation to identify inefficiencies, bottlenecks, and waste. It also helps a company target key areas for improvement and develop an action plan. The VSM for United Defense's VLS uptakes clearly showed the need to reduce

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work-in-process inventory and production lead times. With 86 components traveling a total of 12.1 miles inside the plant before assembly in the final product, finding a simple approach to reduce inventory and travel distance was a challenge. However, with help from Georgia MEP, United Defense developed a plan of action to implement kanban inventory control techniques. The team also condensed workstations to improve efficiency, cut the number of operations, and reduced the distance materials and products travel within the plant. By streamlining process operations, United Defense has improved productivity and product quality.

Results:

Consolidated number of workstations from 19 to 10.

Reduced number of operations from 311 to 225.

Decreased travel distance from approximately 12 miles per part to less than one mile.

Reduced hours per set by 12 percent.

Reduced work-in-progress by two-thirds.

Decreased cycle time by 83 percent.

Increased the number of process certified components by 100 percent.

Testimonial:

"I am very satisfied with the Georgia Manufacturing Extension Partnership's assistance."

Stephen Taylor, Area Manager for Manufacturing